

REMARKS

Claims 1-9 and 11-30 are pending in this application. Claims 18-30 have been added herein. Claims 1, 2, 8, 9, 11, 12 and 14 have been amended herein.

Claim Rejections – 35 USC § 102

Claims 1-9 and 11-17 are rejected under 35 U.S.C. § 102(e) as being anticipated by Subrahmanyam et al. (U.S. Patent No. 6,693,030 B1).

Claims 1, 8 and 14 have been amended to recite, *inter-alia*, exposing said barrier conductor layer to an atmosphere containing a hydride gas at an elevated temperature. Support for the claim language in claims 1, 8 and 14 may be found throughout the initial disclosure. For example, support for “a hydride gas” can be found in page 10, lines 1-3 of the specification where examples of a reducing gas are given, such as, silane ($\text{Si}_n\text{H}_{2n+2}$) gas and ammonia (NH_3) gas. One of ordinary skill in the art would understand the term “hydride” as a compound containing a hydrogen bond, as in the examples given in the specification.

By exposing the barrier conductor layer to a gas atmosphere containing a hydride at an elevated substrate temperature, adhesion between the barrier conductor layer and a metal film is improved.

In contrast, Subrahmanyam et al. discloses a method of precleaning submicron features with radicals from a plasma of a reactive gas such as oxygen, a mixture of CF_4/O_2 or a mixture of He/NF_3 . Subrahmanyam et al. does not disclose, teach or even suggest using a hydride gas such as silane ($\text{Si}_n\text{H}_{2n+2}$) gas and ammonia (NH_3) gas much less exposing a barrier conductor layer to an atmosphere containing a hydride gas at an elevated substrate temperature.

Consequently, for at least this reason, Subrahmanyam et al. does not disclose, teach or suggest the subject matter recited in claims 1, 8 and 14.

Therefore, Applicants respectfully submit that claims 1, 8 and 14, and claims 2-7, 9, 11-13 and 15-17 which depend directly or indirectly from claims 1, 8 and 14, are patentable. Thus, Applicants respectfully request that the rejection of claims 1-9 and 11-17 under § 102(e) be withdrawn.

Claims 18-30 have been added. Support for these claims may be found throughout the initial disclosure. For example, support for “a gas atmosphere containing a nitrogen gas” can be found in page 10, lines 3-4 of the specification.

Claims 18, 26 and 30 recite, *inter-alia*, exposing said barrier conductor layer to an atmosphere containing a nitrogen gas at an elevated temperature.

Subrahmanyam et al. does not disclose, teach or even suggest using a nitrogen gas much less exposing a barrier conductor layer to an atmosphere containing a nitrogen gas at an elevated substrate temperature.

Consequently, Subrahmanyam et al. does not disclose, teach or suggest the subject matter recited in claims 18, 26 and 30.

Therefore, Applicants respectfully submit that claims 18, 26 and 30, and claims 19-25 and 27-29 which depend directly or indirectly from either claim 18 or claim 26, are patentable.

CONCLUSION

In view of the foregoing, the claims are in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

Pillsbury Winthrop LLP

By: 

Jeffrey D. Karceski

Reg. No.: 35,914

Tel. No.: (703) 905-2110

Fax No.: (703) 905-2500

JDK/KG

00909

P.O. BOX 10500

McLean, VA 22102

(703) 905-2000